

Shock Initiation of 1,3,3-Trinitroazetidine (TNAZ).* R. L. Simpson, P. A. Urtiew, C. M. Tarver, Lawrence Livermore National Laboratory.--- The shock sensitivity of the pressed solid explosive 1,3,3-trinitroazetidine (TNAZ) was determined using the embedded manganin pressure gauge technique. At an initial shock pressure of 1.3 GPa, no pressure buildup (exothermic reaction) was observed. At 2 GPa, TNAZ reacted rapidly and nearly transitioned to detonation in 13 mm. At 3.6 GPa, detonation occurred in less than 6 mm of shock propagation. Thus, TNAZ is significantly more shock sensitive than HMX-based explosives. Shocked TNAZ displayed little growth of reaction directly behind the shock front, followed by an extremely rapid reaction. This resulted in both a detonation wave and a retonation wave in the partially decomposed TNAZ. Ignition and Growth reactive flow computer model parameters for TNAZ were established to help understand this complex shock initiation phenomena.

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